

- 45 A method of sorting equine sperm cells according to a determination of their sex characteristic comprising the steps of:
- a. obtaining equine sperm cells from a male of a species of equine mammal;
  - b. staining said equine sperm cells to allow differentiation based upon a sex characteristic;
  - c. establishing a cell source which introduces said equine sperm cells which have been stained into a sheath fluid;
  - d. forming droplets in said sheath fluid;
  - e. entraining said equine sperm cells which have been stained in said droplets;
  - f. differentiating between said equine sperm cells entrained in said droplets based upon said sex characteristic;
  - g. separating said droplets based upon said sex characteristic of said equine sperm cells entrained;
  - h. establishing a skim milk solution into which said droplets separated based upon said sex characteristic of said equine sperm cells entrained are collected
  - i. collecting said equine sperm cells separated based upon said sex characteristic in said skim milk solution;
  - i. establishing a equine artificial insemination sample containing at least some of said equine sperm cells separated based upon said sex characteristic which are capable of fertilizing at least one egg within a female of said species of equine mammal.
- 46 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 45 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected comprises the step of establishing a solution containing a skim milk extender as a collection fluid.
- 47 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 46 wherein said step of establishing a skim milk

solution into which said equine sperm cells are collected further comprises the step of establishing a solution containing about four percent egg yolk as a collection fluid.

- 48 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 45 wherein said sheath fluid contains a HEPES buffered medium.
- 49 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 45 wherein said step of separating said droplets based upon said sex characteristic of said individual equine sperm cells comprises the step of sorting said droplets having said equine sperm cells entrained using a flow cytometer.
- 50 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 49 wherein said step of sorting said droplets having said equine sperm cells entrained using a flow cytometer comprises the step of sorting said droplets having said equine sperm cells entrained at a rate of at least nine hundred per second.
- 51 A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 49 wherein said step of sorting said droplets having said equine sperm cells entrained comprises the step of operating said flow cytometer at a pressure of at least about fifty pounds per square inch.
- 136. A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 45, wherein said equine artificial insemination sample is selected from the group consisting of: an equine artificial insemination sample of no more than about five million equine sperm cells, and an equine artificial insemination sample of no more than about twenty-five million equine sperm cells.

137. A method of sorting equine sperm cells according to a determination of their sex characteristic as described in claim 45, wherein said equine artificial insemination sample has a volume selected from the group consisting of : 0.2 ml, and 1ml.